

Application No. 10/674209
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Amendment
Attorney Docket No. 011.2B-11333-US01

Amendments To The Drawings:

None

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Comments

Claims 1-5 are currently pending. Claim 1 has been amended to address the §112 rejections. Support for the amendment can be found at page 6, line 6 of the specification. No new matter has been added.

Claims 1-4 were rejected under 35 U.S.C. §103(a) as being unpatentable over Inoue (US 2001/0003672 A1) in view of Sasaki (USP 5,352,277). Claims 1-5 were rejected under 35 U.S.C. §103(a) as being unpatentable over Sasaki ('277) in view of Inoue ('672). The applicant traverses the obviousness rejections.

Claim 1 is directed to a polishing composition used in a polishing process for reducing haze level of wafer surface. It is well known for a person skilled in the art that the polishing process for reducing haze level of wafer surface is one of surface finish treatments performed after a polishing process for improving surface smoothness. See page 5, lines 9 to 18 of the applicant's specification.

Contrary to the applicant's invention, Inoue is not concerning haze level reduction of wafer surface. Rather, Inoue discloses a polishing composition having a high polishing removal rate and used in a polishing process for improving surface smoothness by reducing formation of waviness of wafer surface. See paragraph 0002 of Inoue. The polishing composition of Inoue that has a high polishing removal rate is used in a polishing process that is performed prior to a haze level reduction polishing process. It should be noted that a polishing composition used in a haze level reduction polishing process differs from polishing compositions used in other polishing processes. This is because properties required for the polishing composition used in the haze level reduction polishing process differs from those used in other polishing processes. Therefore it is unreasonable for a person skilled in the art to combine Inoue

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with other reference that is directed to a polishing composition used in a polishing process for reducing haze level.

As to Sasaki, we submit that Sasaki is not concerning haze level reduction of wafer surface. Sasaki merely discloses a polishing composition for smooth polishing to remove roughness greater than 5 mμ present on the wafer surface. See col. 1, lines 40 to 45 of Sasaki. Reference is made to Table 1 of Sasaki and Table 2 of the applicant's specification. Table 1 of Sasaki shows various examples of polishing compositions that contain GGG, PAAM, or SPH as a water-soluble polymeric compound. However, GGG, PAAM, and SPH are not effective to reduce haze level. See comparative examples 2, 3, and 4 in Table 2 of the applicant's specification. This is evident that Sasaki is not directed to a polishing composition for reducing haze level of wafer surface.

As discussed above, Inoue and Sasaki are not concerning haze level reduction of wafer surface and there is nothing in the references that would support an obviousness rejection. For at least this reason, claim 1 is patentable over Inoue and Sasaki.

In addition, the polishing composition of claim 1 requires both of hydroxyethyl cellulose (HEC) and polyethylene oxide (PEO). The applicant discovered the fact that the polishing composition containing both of HEC and PEO with the amounts and the molecular weights recited in claim 1 is effective to reduce haze level (HL) without deteriorating light point defect (LPD). This is not suggested or taught by Inoue and Sasaki. Inoue and Sasaki merely suggest that one or more water soluble polymeric materials can be blended in a polishing composition. There would be no motivation to select HEC and PEO among a great number of water soluble polymeric materials to prepare a polishing composition that reduces haze level of wafer surface.

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In the office action, the examiner alleges that hydroxypropyl cellulose is specifically defined as the water soluble polymeric material in Sasaki. This is incorrect. Sasaki merely describes copolymers of hydroxypropyl cellulose and maleic acid (column 21, lines 12-13), but the use of an isolated hydroxyethyl cellulose is not disclosed. Sasaki fails to suggest the combination of HES and PEO with the amounts and the molecular weights recited in claim 1. Although hydroxyethyl cellulose is described in Inoue, the combination of HEC and PEO with the amounts and the molecular weights recited in claim 1 is not suggested by Inoue.

Furthermore, the applicant submits that a person skilled in the art would not blend PEO in a polishing composition used in a polishing step for reducing haze level. It is required for the polishing composition used in the polishing step for reducing haze level to have not only haze level reduction property but also LPD improvement property. However, polyethylene oxide itself deteriorates LPD. Even if Sasaki discloses polyethylene oxide and Inoue discloses hydroxyethyl cellulose, there is no motivation to combine Sasaki and Inoue to prepare the polishing composition containing PEO and HEC used in the polishing step for reducing haze level.

Therefore, the applicant submits that the obviousness rejections are based upon hindsight and are improper and that claim 1 is patentable.

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Conclusion

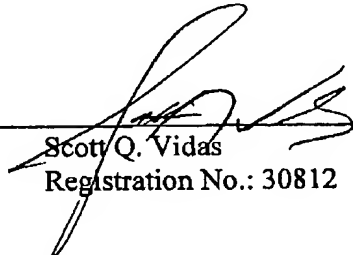
It is respectfully submitted that claims 1-5, as amended, are in a condition for allowance.

Respectfully submitted,

VIDAS, ARRETT & STEINKRAUS

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By: _____


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